

## 2014 Highlights

- Weed Warriors!
  - Jail Crew 192 hrs
  - AmeriCorps 217 hrs
  - Jr. Rangers 496 hrs
  - Volunteers/Youth Corps 451 hrs
- OSMP continues to increase its Agricultural organic production, up from 54 in 2013 to 72 acres in 2014.
- Continued extensive work on Myrtle spurge, Mediterranean sage, purple loosestrife, hairy willow-herb, and many more invasive species.
- Supported the second City Purge the Spurge event in May. Free native plants where given to County residence who removed Myrtle spurge from their properties. City staff collected 1,950 pounds of plant materials during the event.
- Conducted Rapid Assessment Mapping (RAM) to document and locate invasive plant species on the newly acquired Joder and ERTL properties.
- Continued implementation of FEMP and GMAP conservation strategies and collaborative ecological restoration efforts to ensure restoration.
- Surveys and increased management of invasive species in rain and flood affected areas to assist native species recovery.

Cont'd on page 2

# 2013/14 IPM Report

Laurie Deiter & Eric Fairlee

## Overview

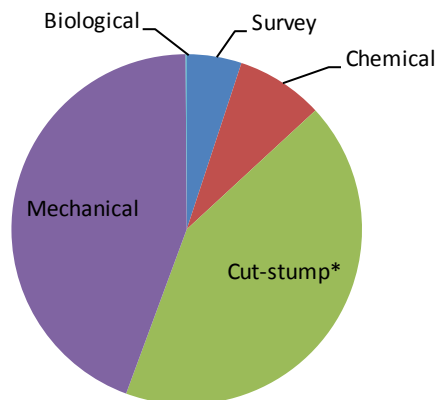
The Integrated Pest Management Program (IPM) considers 68 invasive species a threat to Open Space and Mountain Parks (OSMP) natural lands and promotes conservation through a variety of management and restoration practices. Invasive species on over 5,700 acres of natural and agricultural lands were treated by paid and volunteer crews, hard working lessees, a variety of grazing animals, predatory insects and restoration practices. Surveys were conducted on over 1,700 acres to monitor treatment success or review areas adjacent to treatment sites for possible invasion. These tasks were accomplished by a multitude of people, including OSMP seasonal crews and staff, and AmeriCorps, Junior Rangers, volunteers and jail crews who contributed over 8,100 hours to on-

the-ground invasive species management and restoration work in 2014.

Invasive species management requires a long-term, diligent, planned approach to be successful. There is no such thing as a one-time event.

For example, eradicating Mediterranean sage on OSMP lands without herbicides requires decades of persistence. In 2014, crew spent 775 hours removing Mediterranean sage from 4,000 acres. All of these sites will require continued work in future years.

Time Spent (Hours) on IPM Treatments (2014)



\*Time spent on control of invasive trees involved approximately 90% mechanical removal and 10% application of herbicide.

## Flooding Rains

The flooding rains of September 2013 was a natural, but uncommon occurrence in the Colorado Front Range. The extensive rain and subsequent floods occurred on altered landscapes that contain roads, trails, dams, irrigation ditches and infrastructure, mined lands, and altered hydrology and plant and animal species communities. These changes

impact the way natural lands respond to and recover from natural disturbances. The simple presence of non-native plant species changes the response and recovery of a system to outlier natural events. Land impacted by such an event 100 years ago could only be re-vegetated by native species, the additional soil moisture and flood scoured riparian areas will

now be colonized by both native and non-native plant species. However, invasive species present in the land system often aggressively respond to extra soil moisture and colonize disturbed landscapes more rapidly than native species. The Integrated Pest Management program has our eyes

Cont'd on Page 2

## 2014 Highlights

### Cont'd

- Coordinated with OSMP Agricultural Resources Specialists and goat/sheep contractors to prescriptively graze/mow dense patches of noxious weeds to test management without using synthetic herbicides.
- Increased management through livestock grazing and treatment monitoring of tall oatgrass within the WTSA. Further developed BMP's relating to ground disturbing activities to prevent it's further spread.
- Supported Wildlands Restoration Volunteers who was recently awarded a two year Pulling Together initiative grant intended for Myrtle spurge education and removal efforts on private and government lands with Boulder and Jefferson Counties.
- Continued restoration efforts of ponds to increase habitat for Northern Leopard Frogs. Removal of cattails and other invasive species from
- Ponds improve habitat for a variety of species including deer, dragonflies, bats and other amphibians.



Cont'd on page 4

### Flooding Rains Cont'd

on these rain and flood altered systems for a suite of likely invasive species.

Species expected to and that are starting to take advantage of the September 2013 rains include ruderal and noxious weeds such as musk and scotch thistle, curly dock, annual mustards, diffuse knapweed, Mediterranean Sage (mandated for eradication), Cheatgrass, Dalmatian toadflax, common teasel, and likely many more.

In addition to species taking advantage of the extra soil moisture, species mandated for eradication such as, Bohemian knotweed, hairy willow-herb, purple loosestrife, yellow toadflax, and oxeye daisy have already spread, or are likely to spread as a result of the rains and flood. Other invasive plant species likely to spread are salt cedar, garlic mustard, Eurasian watermilfoil, Russian olive, crack willow, reed canarygrass, Canada thistle, and many others. Garlic mustard can spread by its copious seed production, while bohemian knotweed can spread by stem and root fragments moved in flood water. Salt cedar, hairy willow-herb,



and purple loosestrife will spread by both millions of produced seed and plant fragments.

The key to managing these and any other species is to ensure enough resources are devoted to surveys and mapping as well as early treatments. Postponing treatments can significantly increase future efforts to manage and possibly set-back the recovery of OSMP land systems from succeeding to natural plant communities. In addition, establishment of invasive species and native plant communities in response to the rains and flooding can take decades, so a long-term and diligent approach is required.

It is also important to note that the rains resulted in excellent germination of some invasive plant species. For instance, Cheatgrass and several other species were observed to germinate at very high levels, with a local researcher noting that nearly 100% of the available cheatgrass seed germinated after the September rain.

Staff have witnessed a large increase in distribution and abundance of many invasive plant species since September 2013.





## Creeping Bellflower — *Campanula rapunculoides*

A new invasive species has been discovered on OSMP in Creeping bellflower is an ornamental plant often found in more historic gardens. This variety has bright, bell-shaped blue flowers and heart-shaped leaves that taper to a long point. Creeping bellflower has deep, horizontal fleshy roots in addition to a shallow tuft of fibrous roots. In a garden setting, it can quickly crowd out other desired plants and often escapes into lawns forming dense monotypic patches. It can become a homeowner's headache if not caught early and removed from lawns and uninvited areas.

Surveys by seasonal staff located two creeping bellflower populations on OSMP. Although small in size, staff is concerned because the two sites are five miles apart from each other. Staff carefully removed the plants including all visible rootstock but annual surveys will continue for some time.



## Invasive Species Corner

### Bohemian Knotweed—*Polygonum x Bohemicum*

Bohemian knotweed is a large growing plant with round bamboo-like cane stems and large spade or heart-shaped leaves. Clusters of small white flowers on four inch spikes appear in late summer. Green, often red speckled stems grow back from rootstock each spring and can easily reach 12 feet by mid-summer. A hybrid of Japanese and Himalayan knotweed, Bohemian knotweed thrives in along rivers and roads, but can be found in forests, parks and farms. Because root and stem fragments as little as 1/2 inch can form a new plant, even one patch can produce dozens of new populations.

Mandated for eradication in Colorado beginning in 2012,

Bohemian knotweed is abundant in many of Boulder's neighborhoods. Once in natural areas, it creates thick monocultures in 'disturbed' areas like flood zones, causing stream bank erosion, reducing food resources for wildlife and lowering riparian habitat quality for fish and wildlife. OSMP is aggressively working on all known Bohemian knotweed sites in our natural areas. Through a State grant received by the City of Boulder, Greenways and OSMP are collaborating to monitor various control methods along various waterways east of Boulder.

#### What you can do?

- Remove knotweed from your property
- Do not compost root crowns, rhizomes or fresh stems
- Encourage natives to improve wildlife habitat and healthy waterways
- Get the word out to friends and neighbors



### Emerald Ash Borer

In September 2013, the discovery of Emerald Ash Borer within the city limits of Boulder caused foresters along the Front Range to take note.

"The confirmation of these specimens as emerald ash borer (EAB) marks the western-most occurrence of this invasive pest in North America," said Patrick McPherrren, USDA State Plant Health Director in Colorado. First detected in North America in 2002, Emerald Ash Borer (EAB) is responsible for the death or decline of 50 million ash trees in 21 states. The EAB is a small metallic green beetle originally from Asia attacks and kills ash trees. It's a hard pest to notice before it becomes widespread as it takes 3-4 years for a tree to

show signs of infestation. Using a grid pattern, branch samples taken from ash trees across the city has allowed the Boulder City Foresters to identify where hotspot areas are within the city. A quarantine has been issued by the Colorado Department of Agriculture prohibiting the sale and/or movement of plants and plant parts of ash trees in Boulder County and Erie. The City's 2014 EAB plans are extensive and include establishing multiple advisory and working groups, continued monitoring, developing treatment protocols and educational material. OSMP will be part of an inter-departmental working group to

assist with developing EAB management plans. Training OSMP staff to help identify infested trees will be important as time goes on.



# Agriculture: Updates and Innovations

## Organic Methods

Agricultural resource staff are aiding in the adoption of non-chemical pest management by reaching out to University-based researchers and extension agents for advice, keeping current on the latest research, and providing cost-share money to tenants to employ these alternatives. Agricultural staff have persuaded two tenants to trial an OMRI-approved (Organic Materials Review Institute) product (Entrust®) for alfalfa weevil management. This product is significantly less toxic to bees and other non-target organisms than conventional alfalfa

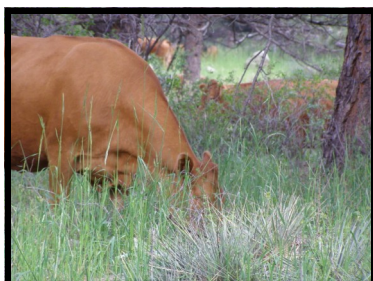
weevil insecticides; however it is nearly four times the cost. Preliminary results from spring 2013 showed a 60% decline in alfalfa weevil larvae one week after spraying at the lowest application rate. Agricultural staff are also working with growers to find alternatives to alfalfa, thereby eliminating the need for application of any insecticides for alfalfa weevil.

Six acres of Sainfoin, a dry-land legume originating from Turkey, have been planted on one grower's field in Spring 2013. Sainfoin produces superior quality hay, yields well, and is not susceptible to alfalfa weevils. If the Sainfoin performs well, we expect to increase the amount of acreage of this crop.



Young Sainfoin plants.

## Improving ecosystem health through livestock grazing



Utilizing livestock to improve ecosystem health has been common practice for centuries. Management objectives, stocking rates, season of use, and vegetation type are some considerations when grazing livestock. Not to mention that different animal species have different grazing preferences. In 2014, OSMP embarked on a multiyear project to manage an inva-

sive grass plaguing the foothills west of Shanahan Ridge using spring cattle grazing (Photo). Research shows short intensive spring grazing will suppress this species while benefiting the rare xeric tallgrass community found here.

Cattle have also been used to graze wetland areas not grazed for decades. The lack of grazing has resulted in the displacement of native plant communities by non-native plant species such as reed canarygrass, common teasel, cattail, perennial pepperweed, and perennial sow thistle. One spring grazing

event successfully removed the canopy of the non-native vegetation allowing native vegetation to once more dominate the wetland. Periodic grazing is required to maintain the native plant community in this wetland. ) (See photo on page 6.)

Goats were employed in a variety of sites where years of no disturbance (grazing, fire, flood) created weedy situations. Goats prefer woody or hard stemmed plant species over grass-like species making them a useful tool in specific locations where preserving the native shrub and overstory is not an objective.

## 2014 Highlights Cont'd

ponds improve habitat for a variety of species including deer, dragonflies, bats and other amphibians.





## Photo Review



Purge the Spurge



Gridding for flowering Mediterranean sage



September 2013 rains resulting in massive M. Sage plants



Knotweed management along Boulder Creek



Enticing goats to eat cattail using molasses



ENJOY. PROTECT.



Before Flood



After Flood



## Improving ecosystem health through livestock grazing, Cont'd

